

SECTION 718 -- CULVERT PIPE

718.01 -- Description

This work shall consist of furnishing and installing culvert pipe of the various types shown in the plans.

718.02 -- Material Requirements

1. The Contractor shall not order the culvert pipe until a list of sizes and lengths is furnished by the Engineer.
2. Reinforced concrete pipe shall conform to the requirements of Section 1037.
3. Corrugated metal pipe shall conform to the requirements of Sections 1035 and 1036.
4. Plastic pipe shall conform to the requirements of Section 1038.
5. Slotted pipe shall conform to the requirements shown in the plans.
6. Granular bedding shall conform to the requirements shown in the plans.
7. Flap gates shall conform to the requirements of Section 1043.

718.03 -- Construction Methods

1. Excavation and backfilling shall be performed by the Contractor in accordance with the applicable requirements of Section 702 and the plans.

2. The installation of Culvert Pipe shall be in accordance with Sections 701, 702, 719, 720, 721, 722, 724, 725, and 726.

3. a. When plastic pipe is used or when corrugated metal pipe 48" (1200 mm) and larger is used, the Contractor shall periodically check for pipe deflection during pipe installation and again not less than 30 days following completion of the roadway embankment. The internal diameter of plastic pipe shall not be reduced by more than 5 percent of its design diameter. The internal diameter of corrugated metal pipe shall not be reduced by more than 7.5 percent of its design diameter. If the installation does not meet these requirements, the pipe shall be removed and replaced at no additional cost to the Department.

b. During the required 30-day reinspection of the culverts, the Contractor must treat the culvert as a "confined space". Appropriate safety procedures shall be followed. "Confined space" means a space that:

- (1) Is large enough and so configured that an employee can bodily enter and perform assigned work; and
- (2) Has limited or restricted means for entry or exit (for example, tanks, vessels, silos, storage bins, hoppers, vaults, and pits are spaces that may have limited means of entry.); and
- (3) Is not designed for continuous employee occupancy.

c. Optional devices for deflection testing include electronic deflectometers, calibrated television or video cameras, or properly sized "go, no-go" mandrels. Deflection measurements can be made directly with extension rulers or tape measures at 10' feet (3 m) increments in pipes that allow safe entry. To ensure accurate measurements, the lines should be cleaned before testing.

d. Deflection testing will not be required on corrugated metal pipe extensions of less than 25 feet (7.6 m).

4. Granular bedding and backfill is required for all flexible pipe installed under the roadway prism. Granular bedding and backfill will not be required for drop pipes, temporary pipes or corrugated metal pipe extensions unless called for in the plans. Granular bedding and/or backfill will be optional for concrete pipe when the Contractor selects the Type 3 Installation.

5. The Contractor shall install flap gates on the ends of culvert pipe when required in the plans. They shall be installed in accordance with the manufacturers recommendations and standards.

6. When polymer pre-coated pipe is used, in order to protect the coated pipe, the Contractor shall use padded or nonmetallic slings and padded straps when handling the pipe. This includes unloading, moving and installation.

718.04 -- Method of Measurement

1. a. All pipe (round, elliptical, arched, or slotted) is measured in linear feet (meter) along the longitudinal axis once in place and accepted.

b. Each type and size of pipe is measured separately.

c. The additional length due to connections will not be measured for payment.

d. Granular bedding will not be measured for payment, but shall be considered subsidiary to the type of pipe being installed.

2. The length of round, arched, or elliptical pipe with elbows will be provided an additional length allowance to cover the cost of each elbow. The allowance is shown in Table 718.01.

Table 718.01

Elbow Allowances	
Pipe Diameter or Round Equivalent Size	Pipe Length Allowance for Each Elbow
Less than 36 inches (900 mm)	7 feet of pipe (2.1 m)
36 to 54 inches (900 mm to 1350 mm)	6 feet of pipe (1.8 m)
Greater than 54 inches (1350 mm)	5 feet of pipe (1.5 m)

3. When flexible pipe connections are required by the Engineer, an additional allowance to cover the cost of each connection shall be made as shown in Table 718.02.

Table 718.02

Connection Allowances	
Pipe Diameter or Round Equivalent Size	Pipe Length Allowance for Each Connection
Less than 21 inches (530 mm)	3 feet of pipe (900 mm)
21 inches (530 mm) or larger	4 feet of pipe (1200 mm)

4. Flap gates shall be measured for payment by the each, complete in place. The pay item is "____ inch (mm) Automatic Flood Control Gate".

718.05 -- Basis of Payment

1. Pay Item	Pay Unit
____inch (mm) Culvert Pipe, Type____	Linear Foot (LF) [meter (m)]
____inch (mm) Automatic Flood Control Gate	Each (ea)
____inch (mm) Slotted Culvert Pipe, Type____	Linear Foot (LF) [meter (m)]
____inch (mm) Round Equivalent Culvert Pipe, Type____	Linear Foot (LF) [meter (m)]

2. Flap Gates shall be paid for at the contract unit price per each under the item, "____ inch (mm) Automatic Flood Control Gate". Each different size is a separate pay item.

3. Granular bedding for culvert pipe shall be subsidiary to the appropriate culvert pipe pay item.

4. Payment is full compensation for all work prescribed in this Section.